

Appl. No. 09/550,219  
 BLD920000003US1/(ibmn009-0519)  
 Amdt. Dated: April 25, 2007  
 Reply to Office Action of September 6, 2005

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# IN THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

- 1           1.       (Currently Amended) A method for increasing print job throughput in printer  
 2       spooling arrangements, comprising:  
 3                   receiving a print job having associated print data;  
 4                   writing ~~the~~ print data associated with the print job to a storage device;  
 5                   reading ~~the~~ print data associated with the print job from the storage device  
 6       concurrently with the writing of ~~the~~ print data associated with the print job to the storage  
 7       device; and  
 8                   printing the print data associated with the print job that is read from the  
 9       storage device concurrently while print data associated with the print job is being written to  
 10      the storage device.
  
- 1           2.       (Original)     The method of Claim 1, wherein concurrently reading and  
 2       writing the print data comprises reading the print data associated with the print job from the  
 3       storage device as long as at least a portion of the print data associated with the print job is  
 4       available on the storage device.
  
- 1           3.       (Original)     The method of Claim 2, further comprising generating a  
 2       message indicating that the print job is pending.
  
- 1           4.       (Original)     The method of Claim 3, further comprising initiating the  
 2       reading of the print data from the storage device in response to recognition of the message.

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1           5.       (Original)     The method of Claim 2, further comprising:  
2                   maintaining status attributes to identify a data file for the print job that has  
3       been created on the storage device to spool the print data, and to identify when at least a  
4       portion of the print data associated with the print job becomes available on the storage  
5       device.

1           6.       (Original)     The method of Claim 5, further comprising:  
2                   monitoring the status attributes to determine when the print data associated  
3       with the print job becomes available on the storage device; and  
4                   initiating the reading of the print data from the storage device upon  
5       recognition of the status attributes indicating that at least a portion of the print data associated  
6       with the print job is available on the storage device.

1           7.       (Original)     The method of Claim 1, further comprising suspending reading  
2       of the print data associated with the print job if the quantity of the print data written to the  
3       storage device is less than a predetermined number of bytes.

1           8.       (Original)     The method of Claim 1, further comprising suspending reading  
2       of the print data associated with the print job when all of the print data written to the storage  
3       device has been read from the storage device but before the print data has been written to the  
4       storage device in its entirety.

1           9.       (Original)     The method of Claim 8, further comprising generating an end  
2       of job indication when the print data has been written to the storage device in its entirety.

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1           10.    (Original)    The method of Claim 8, further comprising resuming reading  
2   of the print data when additional print data has been written to the storage device.

1           11.    (Original)    The method of Claim 1, further comprising reading the print  
2   data from the storage device only after the writing of the print data has completed, if the print  
3   data is associated with predetermined one or more file types.

1           12.    (Original)    The method of Claim 11, wherein the predetermined file types  
2   includes a PDF file type.

1           13.    (Original)    The method of Claim 1, further comprising reading a number  
2   of bytes of the print data from the storage device that is above a number of bytes of the print  
3   data that has been written to the storage device.

1           14.    (Original)    The method of Claim 1, further comprising updating despool  
2   availability status to identify the print data as available for reading from the storage device  
3   upon creation of a data file on the storage device to which the print data is directed.

1           15.    (Original)    The method of Claim 14, further comprising monitoring the  
2   despool availability status to determine when to initiate the reading of the print data from the  
3   storage device.

1           16.    (Original)    The method of Claim 15, wherein monitoring the despool  
2   availability status comprises monitoring the despool availability status using a back-end  
3   despooling daemon.

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1           17.   (Original)    The method of Claim 14, wherein updating the despool  
2   availability status comprises updating the despool availability status using a front-end  
3   spooling daemon.

1           18.   (Currently Amended) A printing device for processing print job requests,  
2   comprising:  
3               at least one input channel to receive the print job requests;  
4               a storage medium to store print data associated with the print job requests;  
5               a spooling module coupled to receive the print job requests and associated  
6   print data, and to write the print data associated with a print job request to the storage  
7   medium;  
8               a despooling module to receive notification of an availability of the print data  
9   associated with a print job request on the storage medium, and to concurrently read a first  
10   portion of the print data associated with a print job request from the storage medium as a  
11   second portion of the print data associated with a print job request is written to the storage  
12   medium; and  
13               a print engine to print the print data associated with a print job request that is  
14   read from the storage medium concurrently while print data associated with the print job is  
15   being written to the storage device.

1           19.   (Original)    The printing device of Claim 18, further comprising a job  
2   monitor module to maintain spooling status including an active spool indication to indicate  
3   that the print data is being written to the storage medium.

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1           20.    (Original)    The printing device of Claim 18, further comprising a job  
2   monitor module to maintain spooling status including a write count indication to indicate a  
3   number of bytes of the print data that has been written to the storage medium.

1           21.    (Original)    The printing device of Claim 18, wherein the despooling  
2   module comprises means for reading the first portion of the print data that does not exceed  
3   the write count indication.

1           22.    (Original)    The printing device of Claim 18, wherein the storage medium  
2   is a hard disk.

1           23.    (Original)    The printing device of Claim 22, wherein the hard disk is  
2   formatted with a spooler directory to reserve storage for the print data associated with the  
3   print job requests.

1           24.    (Original)    The printing device of Claim 22, wherein the hard disk is  
2   resident on the printing device.

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1           25.   (Currently Amended) A print server system for processing print jobs,  
2   comprising:  
3                   one or more client systems arranged in a network to generate print jobs  
4   identifying print data for printing;  
5                   transmission media coupled to receive the print jobs and to transfer the print  
6   jobs initiated on the network;  
7                   a printing device coupled to the network via the transmission media to receive  
8   and process the print jobs, the printing device comprising:  
9                   a storage medium to store print data associated with the print jobs;  
10                   a spooling module coupled to receive the print job requests and  
11   associated print data, and to write the print data associated with a print job request to the  
12   storage medium;  
13                   a despooling module to receive notification of an availability of the  
14   print data associated with a print job request on the storage medium, and to concurrently read  
15   a first portion of the print data associated with a print job request from the storage medium as  
16   a second portion of the print data associated with a print job request is written to the storage  
17   medium; and  
18                   a print engine to print the print data associated with a print job request  
19   that is read from the storage medium concurrently while print data associated with the print  
20   job is being written to the storage device.

1           26.   (Original)   The print server system of Claim 25, wherein the printing  
2   device comprises at least one input channel to receive the print job requests.

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1           27.    (Original)    The print server system of Claim 25, wherein the printing  
2   device further comprises a job monitor module to maintain spooling status including an  
3   active spool indication to indicate that the print data is being written to the storage medium.

1           28.    (Original)    The print server system of Claim 25, wherein the printing  
2   device further comprises a job monitor module to maintain spooling status including a write  
3   count indication to indicate a number of bytes of the print data that has been written to the  
4   storage medium.

1           29.    (Original)    The print server system of Claim 25, wherein the despooling  
2   module comprises means for reading the first portion of the print data that does not exceed  
3   the write count indication.

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- 1           30.   (Currently Amended) A computer-readable program storage medium tangibly  
2   embodying a program of instructions executable by a printer system to process print jobs by  
3   performing steps comprising:  
4                receiving a print job having associated print data;  
5                writing the print data associated with the print job to a storage device;  
6                reading the print data associated with the print job from the storage device  
7   concurrently with the writing of the print data associated with the print job to the storage  
8   device; and  
9                printing the print data associated with the print job that is read from the  
10   storage device concurrently while print data associated with the print job is being written to  
11   the storage device.



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1           31.   (Currently Amended) A method for concurrently spooling and despooling a  
2   print job to and from a storage device to increase printer throughput, comprising:  
3               creating a file on a storage device in which to store the print job;  
4               writing print data associated with the print job to the storage device;  
5               maintaining a status indicator indicating whether the print data is currently  
6   being written to the storage device;  
7               monitoring the status indicator to determine if the print job is currently being  
8   written to the storage medium;  
9               retrieving the print data associated with the print job from the storage medium  
10   concurrently with the writing of the print data to the storage medium, wherein the print data  
11   retrieved is the portion of the print data associated with the print job that has been written to  
12   the storage device; and  
13               sending to the printing device for printing the retrieved print data associated  
14   with the print job that is read concurrently while print data associated with the print job is  
15   being written to the storage medium to the printing device for printing.